

EXHIBIT C

TRANSLATOR'S DECLARATION

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10-7, Higashi Kanda 1-chome, Chiyoda-ku, Tokyo 101-0031 JAPAN, do
hereby declare that I am the translator of the priority document of
Japanese Patent Application No. 2003-016888 and swear that the following
is a true translation to the best of my knowledge and belief.

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[Document Title] Specification

[Title of the Invention]

INTERNET TELEPHONE SYSTEM, CALL CONNECTION CONTROLLER,
TERMINAL ASSOCIATION METHOD USED THEREIN AND ITS PROGRAM

5 [What is claimed is]

[Claim 1] An Internet telephone system comprising:
an information processor having an Internet telephone
function enabling to make a call to a counterpart terminal;
and

10 a call connection controller which connects with the
information processor over an Internet line and
accommodates a telephone terminal; wherein

the call connection controller has means for causing
the information processor and the telephone terminal

15 corresponding to each other to share call control
information at a time of making a call to the counterpart
terminal.

[Claim 2] The Internet telephone system, as claimed
in claim 1, wherein the call connection controller includes
20 means for confirming, at a time of originating manipulation,
whether there is a terminal which has been corresponded
beforehand to an originating terminal.

[Claim 3] The Internet telephone system, as claimed
in claim 1 or 2, wherein the telephone terminal is at least
25 one of a radio mobile terminal and a fixed-line terminal

accommodated in the call connection controller.

[Claim 4] The Internet telephone system, as claimed in any one of claims 1 to 3, wherein, at a time of making a call from the telephone terminal to the counterpart terminal, call control information thereof is informed to the information processor.

[Claim 5] The Internet telephone system, as claimed in any one of claims 1 to 4, wherein voice information in the telephone terminal is transmitted/received using line equipment of the call connection controller.

[Claim 6] The Internet telephone system, as claimed in any one of claims 1 to 5, wherein the call connection controller includes means for retaining information for specifying the information processor and information for specifying the telephone terminal by corresponding to each other, as terminal association information.

[Claim 7] The Internet telephone system, as claimed in claim 6, wherein, at a time of activating origination processing, information is shared between the information processor and the telephone terminal corresponding to each other by referring to the terminal association information which has been registered beforehand in the call connection controller.

[Claim 8] The Internet telephone system, as claimed in any one of claims 1 to 7, wherein the call connection

controller is a private branch exchange.

[Claim 9] An Internet telephone system comprising:
an information processor having an Internet telephone
function enabling to make a call to a counterpart terminal;
5 and

a call connection controller which connects with the
information processor over an Internet line and
accommodates a telephone terminal; wherein
the call connection controller has means for transferring a
10 call reception request from the counterpart terminal, to
each of the information processor and the telephone
terminal corresponding to each other.

[Claim 10] The Internet telephone system, as claimed
in claim 9, wherein the call connection controller includes
15 means for confirming, at a time of inbound processing,
whether there is a terminal which has been corresponded
beforehand to a receiving terminal.

[Claim 11] The Internet telephone system, as claimed
in claim 9 or 10, wherein the telephone terminal is at
20 least one of a radio mobile terminal and a fixed-line
terminal accommodated in the call connection controller.

[Claim 12] The Internet telephone system, as claimed
in any one of claims 9 to 11, wherein voice information in
the telephone terminal is transmitted/received using line
25 equipment for the call connection controller.

[Claim 13] The Internet telephone system, as claimed
in any one of claims 9 to 11, wherein the call connection
controller includes means for retaining information for
specifying the information processor and information for
5 specifying the telephone terminal by corresponding to each
other, as terminal association information.

[Claim 14] The Internet telephone system, as claimed
in claim 13, wherein, at a time of activating inbound
processing, information is shared between the information
10 processor and the telephone terminal corresponding to each
other by referring to the terminal association information
which has been registered beforehand in the call connection
controller.

[Claim 15] The Internet telephone system, as claimed
15 in any one of claims 9 to 14, wherein the call connection
controller is a private branch exchange.

[Claim 16] An Internet telephone system comprising:
an information processor having an Internet telephone
function enabling to make a call to a counterpart terminal;
20 and
a call connection controller which connects with the
information processor over an Internet line and
accommodates a telephone terminal; wherein
the call connection controller includes: means for
25 causing the information processor and the telephone

terminal corresponding to each other to share call control information at a time of making a call to the counterpart terminal; and means for transferring a call reception request from the counterpart terminal, to each of the 5 information processor and the telephone terminal corresponding to each other.

[Claim 17] The Internet telephone system, as claimed in claim 16, wherein the call connection controller includes means for confirming, at a time of originating 10 manipulation, whether there is a terminal which has been corresponded beforehand to an originating terminal.

[Claim 18] The Internet telephone system, as claimed in claim 16 or 17, wherein the call connection controller includes means for confirming, at a time of inbound 15 processing, whether there is a terminal which has been corresponded beforehand to a receiving terminal.

[Claim 19] The Internet telephone system, as claimed in any one of claims 16 to 18, wherein the telephone terminal is at least one of a radio mobile terminal and a 20 fixed-line terminal accommodated in the call connection controller.

[Claim 20] The Internet telephone system, as claimed in any one of claims 16 to 19, wherein, at a time of making a call from the telephone terminal to the counterpart 25 terminal, call control information thereof is informed to

the information processor.

[Claim 21] The Internet telephone system, as claimed in any one of claims 16 to 20, wherein voice information in the telephone terminal is transmitted/received using line equipment for the call connection controller.

[Claim 22] The Internet telephone system, as claimed in any one of claims 16 to 21, wherein the call connection controller includes means for retaining information for specifying the information processor and information for specifying the telephone terminal by corresponding to each other, as terminal association information.

[Claim 23] The Internet telephone system, as claimed in claim 22, wherein, at a time of activating origination processing or inbound processing, information is shared between the information processor and the telephone terminal corresponding to each other by referring to the terminal association information which has been registered beforehand in the call connection controller.

[Claim 24] The Internet telephone system, as claimed in any one of claims 16 to 23, wherein the call connection controller is a private branch exchange.

[Claim 25] A call connection controller which connects with an information processor having an Internet telephone function enabling to make a call to a counterpart terminal, accommodates a telephone terminal, and includes

means for causing the information processor and the telephone terminal corresponding to each other to share call control information at a time of making a call to the counterpart terminal.

5 [Claim 26] The call connection controller, as claimed in claim 25, comprising means for confirming, at a time of originating manipulation, whether there is a terminal which has been corresponded beforehand to a originating terminal.

10 [Claim 27] The call connection controller, as claimed in claim 26, wherein the telephone terminal is at least one of a radio mobile terminal and a fixed-line terminal accommodated in the call connection controller.

[Claim 28] The call connection controller, as claimed
15 in any one of claims 25 to 27, wherein, at a time of making a call from the telephone terminal to the counterpart terminal, call control information thereof is informed to the information processor.

[Claim 29] The call connection controller, as
20 claimed in any one of claims 25 to 28, wherein voice information in the telephone terminal is transmitted/received over line equipment for the call connection controller.

[Claim 30] The call connection controller, as
25 claimed in any one of claims 25 to 29, comprising means for

retaining information for specifying the information processor and information for specifying the telephone terminal by corresponding to each other, as terminal association information.

5 [Claim 31] The call connection controller, as claimed in claim 30, wherein, at a time of activating origination processing, information is shared between the information processor and the telephone terminal corresponding to each other, by referring to the terminal
10 association information which has been registered in the call connection controller beforehand.

[Claim 32] The call connection controller, as claimed in any one of claims 25 to 31, wherein the call connection controller is a private branch exchange.

15 [Claim 33] A call connection controller which connects with an information processor having an Internet telephone function enabling to make a call to a counterpart terminal, accommodates a telephone terminal, and includes means for transferring a call reception request from the
20 counterpart terminal, to each of the information processor and the telephone terminal corresponding to each other.

[Claim 34] The call connection controller, as claimed in claim 33, comprising means for confirming, at a time of inbound processing, whether there is a terminal which has
25 been corresponded beforehand to a receiving terminal.

[Claim 35] The call connection controller, as claimed in claim 33 or 34, wherein the telephone terminal is at least one of a radio mobile terminal and a fixed-line terminal accommodated in the call connection controller.

5 [Claim 36] The call connection controller, as claimed in any one of claims 33 to 35, wherein voice information in the telephone terminal is transmitted/received over line equipment for the call connection controller.

10 [Claim 37] The call connection controller, as claimed in any one of claims 33 to 36, comprising means for retaining information for specifying the information processor and information for specifying the telephone terminal by corresponding to each other, as terminal association information.

15 [Claim 38] The call connection controller, as claimed in claim 37, wherein, at a time of activating inbound processing, information is shared between the information processor and the telephone terminal corresponding to each other, by referring to the terminal association information which has been registered in the call connection controller beforehand.

20 [Claim 39] The call connection controller, as claimed in any one of claims 33 to 38, wherein the call connection controller is a private branch exchange.

25 [Claim 40] A call connection controller which

connects with an information processor having an Internet telephone function enabling to make a call to a counterpart terminal, accommodates a telephone terminal, and comprises:

means for causing the information processor and the

- 5 telephone terminal corresponding to each other to share call control information at a time of making a call to the counterpart terminal, and

means for transferring a call reception request from the counterpart terminal, to each of the information processor

- 10 and the telephone terminal corresponding to each other.

[Claim 41] The call connection controller, as claimed in claim 40, comprising means for confirming, at a time of originating manipulation, whether there is a terminal which has been corresponded beforehand to an originating terminal.

- 15 [Claim 42] The call connection controller, as claimed in claim 40 or 41, wherein the call connection controller includes means for confirming, at a time of inbound processing, whether there is a terminal which has been corresponded beforehand to a receiving terminal.

- 20 [Claim 43] The call connection controller, as claimed in any one of claims 40 to 42, wherein the telephone terminal is at least one of a radio mobile terminal and a fixed-line terminal accommodated in the call connection controller.

- 25 [Claim 44] The call connection controller, as

claimed in any one of claims 40 to 43, wherein, at a time of making a call from the telephone terminal to the counterpart terminal, call control information thereof is informed to the information processor.

5 [Claim 45] The call connection controller, as claimed in any one of claims 40 to 44, wherein voice information in the telephone terminal is transmitted/received using line equipment for the call connection controller.

10 [Claim 46] The call connection controller, as claimed in any one of claims 40 to 45, including means for retaining information for specifying the information processor and information for specifying the telephone terminal by corresponding to each other, as terminal
15 association information.

[Claim 47] The call connection controller, as claimed in claim 46, wherein, at a time of activating origination processing or inbound processing, information is shared between the information processor and the
20 telephone terminal corresponding to each other by referring to the terminal association information which has been registered beforehand in the call connection controller.

[Claim 48] The call connection controller, as claimed in any one of claims 40 to 47, wherein the call
25 connection controller is a private branch exchange.

[Claim 49] A terminal association method for an Internet telephone system including an information processor having an Internet telephone function enabling to make a call to a counterpart terminal and a call connection controller which connects with the information processor over an Internet line and accommodates a telephone terminal, the method comprises a step of causing the information processor and the telephone terminal corresponding to each other to share call control information at the time of making a call to the counterpart terminal.

[Claim 50] The terminal association method, as claimed in claim 49, comprising a step of confirming to the call connection controller, at a time of originating manipulation, whether there is a terminal which has been corresponded beforehand to an originating terminal.

[Claim 51] The terminal association method, as claimed in claim 49 or 50, wherein the telephone terminal is at least one of a radio mobile terminal and a fixed-line terminal accommodated in the call connection controller.

[Claim 52] The terminal association method, as claimed in any one of claims 49 to 51, wherein, at a time of making a call from the telephone terminal to the counterpart terminal, call control information thereof is informed to the information processor.

[Claim 53] The terminal association method, as

claimed in any one of claims 49 to 52, wherein voice information in the telephone terminal is transmitted/received over line equipment for the call connection controller.

- 5 [Claim 54] The terminal association method, as claimed in any one of claims 49 to 53, wherein information for specifying the information processor and information for specifying the telephone terminal are retained, by corresponding to each other, as terminal association
10 information in the call connection controller.

[Claim 55] The terminal association method, as claimed in claim 54, wherein, at a time of activating origination processing, information is shared between the information processor and the telephone terminal

- 15 corresponding to each other, by referring to the terminal association information which has been registered in the call connection controller beforehand.

- [Claim 56] The terminal association method, as claimed in any one of claims 49 to 55, wherein the call
20 connection controller is a private branch exchange.

- [Claim 57] A terminal association method for an Internet telephone system including an information processor having an Internet telephone function enabling to make a call to a counterpart terminal and a call connection controller which
25 connects with the information processor over an Internet

line and accommodates a telephone terminal, the method comprises a step of transferring a call reception request from the counterpart terminal, to each of the information processor and the telephone terminal corresponding to each
5 other.

[Claim 58] The terminal association method, as claimed in claim 57, comprising a step of confirming, to the call connection controller, at a time of inbound processing, whether there is a terminal which has been
10 corresponded beforehand to a receiving terminal.

[Claim 59] The terminal association method, as claimed in claim 57 or 58, wherein the telephone terminal is at least one of a radio mobile terminal and a fixed-line terminal accommodated in the call connection controller.

15 [Claim 60] The terminal association method, as claimed in any one of claims 57 to 59, wherein voice information in the telephone terminal is transmitted/received over line equipment for the call connection controller.

20 [Claim 61] The terminal association method, as claimed in any one of claims 57 to 60, wherein information for specifying the information processor and information for specifying the telephone terminal are retained, by corresponding to each other, as terminal association
25 information in the call connection controller.

[Claim 62] The terminal association method, as claimed in claim 61, wherein, at a time of activating inbound processing, information is shared between the information processor and the telephone terminal

- 5 corresponding to each other, by referring to the terminal association information which has been registered in the call connection controller beforehand.

[Claim 63] The terminal association method, as claimed in any one of claims 57 to 62, wherein the call
10 connection controller is a private branch exchange.

[Claim 64] A terminal association method for an Internet telephone system including an information processor having an Internet telephone function enabling to make a call to a counterpart terminal and a call connection
15 controller which connects with the information processor over an Internet line and accommodates a telephone terminal, the method comprises steps of: causing the information processor and the telephone terminal corresponding to each other to share call control information at the time of
making a call to the counterpart terminal; and transferring
20 a call reception request from the counterpart terminal, to each of the information processor and the telephone terminal corresponding to each other.

[Claim 65] The terminal association method, as
25 claimed in claim 64, comprising a step of confirming to the

call connection controller, at a time of originating manipulation, whether there is a terminal which has been corresponded beforehand to an originating terminal.

[Claim 66] The terminal association method, as
5 claimed in claim 64 or 65, comprising a step of confirming to the call connection controller, at a time of inbound processing, whether there is a terminal which has been corresponded beforehand to a receiving terminal.

[Claim 67] The terminal association method, as
10 claimed in any one of claims 64 to 66, wherein the telephone terminal is at least one of a radio mobile terminal and a fixed-line terminal accommodated in the call connection controller.

[Claim 68] The terminal association method, as
15 claimed in any one of claims 64 to 67, wherein, at a time of making a call from the telephone terminal to the counterpart terminal, call control information thereof is informed to the information processor.

[Claim 69] The terminal association method, as
20 claimed in any one of claims 64 to 68, wherein voice information in the telephone terminal is transmitted/received over line equipment for the call connection controller.

[Claim 70] The terminal association method, as
25 claimed in any one of claims 64 to 69, wherein information

for specifying the information processor and information for specifying the telephone terminal are retained, by corresponding to each other, as terminal association information in the call connection controller.

- 5 [Claim 71] The terminal association method, as claimed in claim 70, wherein, at a time of activating origination processing or inbound processing, information is shared between the information processor and the telephone terminal corresponding to each other, by
- 10 referring to the terminal association information which has been registered beforehand in the call connection controller.

- [Claim 72] The terminal association method, as claimed in any one of claims 64 to 71, wherein the call
- 15 connection controller is a private branch exchange.

- [Claim 73] A program for executing the terminal association method for an Internet telephone system including an information processor having an Internet telephone function enabling to make a call to a counterpart
- 20 terminal and a call connection controller which connects with the information processor over an Internet line and accommodates a telephone terminal, for causing a computer to execute a process of causing the information processor and the telephone terminal corresponding to each other to
- 25 share call control information at the time of making a call

to the counterpart terminal.

[Claim 74] A program for executing the terminal association method for an Internet telephone system including an information processor having an Internet 5 telephone function enabling to make a call to a counterpart terminal and a call connection controller which connects with the information processor over an Internet line and accommodates a telephone terminal, for causing a computer to execute a process of transferring a call reception 10 request from the counterpart terminal, to each of the information processor and the telephone terminal corresponding to each other.

[Claim 75] A program for executing the terminal association method for an Internet telephone system 15 including an information processor having an Internet telephone function enabling to make a call to a counterpart terminal and a call connection controller which connects with the information processor over an Internet line and accommodates a telephone terminal, for causing a computer to execute processes of causing the information processor 20 and the telephone terminal corresponding to each other to share call control information at the time of making a call to the counterpart terminal, and transferring a call reception request from the counterpart terminal, to each of 25 the information processor and the telephone terminal

corresponding to each other. [Detailed Description of the Invention]

[0001]

[Field of the Invention]

5 The present invention relates to an Internet telephone system, a call connection controller, a terminal association method used therein, and its program. In particular, the present invention relates to a method of associating an existing extension telephone and a personal
10 computer having an Internet telephone function.

[0002]

[Description of the Related Art]

Conventionally, as a method of associating with this type of personal computer (hereinafter referred to as PC),
15 there is one in which a voice input/output port and a MIDI (Musical Instrument Digital Interface) port, of a sound card installed in an extension slot of a PC, are connected with the main body of a handset (see, for example, Patent Document 1).

20 [0003]

The main body of the handset is equipped with a speaker and a hook switch, and the handset is being connectable. In a case of the sound card being connected with the main body of the handset, the voice input/output
25 port and the MIDI are connected with the speaker and the

handset, and a voice input/output mode, corresponding to signals indicating the on-hook information or the off-hook information from the hook switch, is used.

[0004]

5 In another association method with a PC, IP(Internet Protocol) telephones as communication terminals and PCs corresponding to the respective IP telephones are interconnected over a LAN(Local Area Network), and with a control by the PC, an IP telephone corresponding to the PC
10 is associated (see, for example, Patent Document 2).

[0005]

Fig. 13 shows a call operation between terminals through a private branch exchange [so-called PBX (Private Branch eXchange)] which is a typical call connection controller. In Fig. 13, a call between a first terminal 91 and a second terminal 92, each of which is a radio mobile terminal, is made in such a manner that the terminals are connected with the private branch exchange 6 via radio base stations 81, 82, and a voice path between the two terminals
15 is defined by a connection switch (not shown) in the private branch exchange 6. In a case that the first terminal 91 and the second terminal 92 are fixed-line terminals, the first terminal 91 and the second terminal 92
20 are interconnected over a line of the private branch exchange 6.
25

[0006]

Fig. 14 shows an exemplary structure of a typical Internet telephone system. In Fig.14, a PC 7 includes, a voice input/output unit 71, a communication interface(I/F) 5 unit 72 which transmits/receives Internet telephone information over an Internet line 200 such as a LAN, and a control software 73 for transmitting/receiving call control information between the private branch exchange 6.

[0007]

10 Conventionally, when making a call using an Internet telephone, dialing the receiver's number from a keyboard 74 connected with the PC 7, or activating an application such as a telephone book so as to perform an originating manipulation.

15 [0008]

A call is realized by using a handset 75 connected with the voice input/output unit 71. Voice information is transmitted/received with a use of the Internet line 200 such as a LAN via the handset 75 and the PC 7. In a case 20 that there are terminals accommodated in the private branch exchange 9, for example, the first terminal 91 and the second terminal 92 which may be radio mobile terminals such as private PHS(Personal Handy-phone System) or fixed-line terminals, a user holds two terminals. Further, extension 25 numbers managed by the private branch exchange 6 are

assigned to the two devices, so that it may be troublesome for the user to manage devices and telephone numbers.

[0009]

Further, in the aforementioned Internet telephone system, voice information is to be transmitted/received over the Internet line 200 such as a LAN. Therefore, in addition to line equipment for the private branch exchange constructed for one user, it is required to secure the Internet line 200 such as a LAN taking into account the transmission/reception of the voice information.

[0010]

Further, in the aforementioned Internet telephone system, when a voice connection is made between the PC 7 and the second terminal 92, digital voice information from the PC 7 is converted into an IP packet at an IP (Internet Protocol) converter 61 in the private branch exchange 6, then a voice path with the second terminal 92 is formed.

[0011]

[Patent Document 1]

Japanese Patent Application Laid-open No. 2000-115354
(pp.4-5, Fig. 1)

[Patent Document 2]

Japanese Patent Application Laid-open No. 2002-199026
(pp.9-10, Fig. 1)

25 [Problem to be Solved by the Invention]

[0012]

In the conventional Internet telephone system described above, if the Internet telephone is one using a PC, there is a problem of lacking in secrecy since speaking 5 contents are output from the speaker of the PC. In order to solve this problem, the technique described in the aforementioned Patent Document 1 improves the secrecy by connecting a handset with a hook switch. However, with the technique of Patent Document 1, the handset is connected 10 with the PC by a wire, so that there is a problem that the freedom of the user is limited.

[0013]

Even in a case the handset is replaced with the one of a codeless type in order to improve the freedom of the 15 movable range of the user, voice information is transmitted/received over the PC and the LAN. Therefore, it is necessary to secure enough bands for transmitting/receiving a voice.

[0014]

20 Further, in the conventional Internet telephone system, there is a problem that an Internet telephone using the PC cannot be used as a telephone when the power source of the PC is off.

[0015]

25 In the technique described in the aforementioned

Patent Document 2, although an association between the PC and the terminal is shown, it is so structured that call connection information from the connection controller is received for a while at an application on the PC, and

5 establishing associations such a manner that the call connection information is relayed to the existing terminal which is categorized for each originator in advance, are associated. Therefore, the terminal association at the time of origination cannot be realized. In this case,

10 since the voice information is transmitted/received via the PC and the LAN, it is necessary to secure the enough bands for transmitting/ receiving a voice, and there is a problem that the terminal association at the time of origination cannot be realized if the power source of the PC is off.

15 [0016]

It is therefore an object of the present invention to provide an Internet telephone system, a call connection controller, a terminal association method used therein and its program, which are capable of solving the

20 aforementioned problems, establishing associations between Internet telephones and existing extension terminals, and increasing a freedom of a place where a user can stay.

[Scheme for Solving the Problems]

[0017]

25 An Internet telephone system according to the present

invention comprises: an information processor having an Internet telephone function enabling to make a call to a counterpart terminal; and a call connection controller which connects with the information processor over an

5 Internet line and accommodates a telephone terminal, in which the call connection controller is provided with a means for causing the information processor and the telephone terminal corresponding to each other to share call control information at the time of making a call to

10 the counterpart terminal.

[0018]

Another Internet telephone system according to the present invention comprises: an information processor having an Internet telephone function enabling to make a

15 call to a counterpart terminal; and a call connection controller which connects with the information processor over an Internet line and accommodates a telephone terminal, in which the call connection controller is provided with a means for transferring a call reception request from the

20 counterpart terminal, to each of the information processor and the telephone terminal corresponding to each other.

[0019]

Still another Internet telephone system according to the present invention comprises: an information processor

25 having an Internet telephone function enabling to make a

call to a counterpart terminal; and a call connection controller which connects with the information processor over an Internet line and accommodates a telephone terminal, in which the call connection controller is provided with a
5 means for causing the information processor and the telephone terminal corresponding to each other to share call control information at the time of making a call to the counterpart terminal, and a means for transferring a call reception request from the counterpart terminal, to
10 each of the information processor and the telephone terminal corresponding to each other.

[0020]

A private branch exchange according to the present invention is a call connection controller which is
15 connected with the information processor having an Internet telephone function enabling to make a call to a counterpart terminal and accommodates a telephone terminal, provided with a means for causing the information processor and the telephone terminal corresponding to each other to share
20 call control information at the time of making a call to the counterpart terminal.

[0021]

Another private branch exchange according to the present invention is a call connection controller which is
25 connected with the information processor having an Internet

telephone function enabling to make a call to a counterpart terminal and accommodates a telephone terminal, provided with a means for transferring a call reception request from the counterpart terminal, to each of the information

- 5 processor and the telephone terminal corresponding to each other.

[0022]

Still another private branch exchange according to the present invention is a call connection controller which

- 10 is connected with the information processor having an Internet telephone function enabling to make a call to a counterpart terminal and accommodates a telephone terminal, provided with a means for causing the information processor and the telephone terminal corresponding to each other to share call control information at the time of making a call to the counterpart terminal, and a means for transferring a call reception request from the counterpart terminal, to each of the information processor and the telephone terminal corresponding to each other.
- 15

- 20 [0023]

A terminal association method according to the present invention is a terminal association method for an Internet telephone system including an information processor having an Internet telephone function enabling to make a call to a counterpart terminal and a call connection

controller which connects with the information processor over an Internet line and accommodates a telephone terminal, the method comprises a step of causing the information processor and the telephone terminal corresponding to each 5 other to share call control information at the time of making a call to the counterpart terminal.

[0024]

Another terminal association method according to the present invention is a terminal association method for an 10 Internet telephone system including an information processor having an Internet telephone function enabling to make a call to a counterpart terminal and a call connection controller which connects with the information processor over an Internet line and accommodates a telephone terminal, 15 the method comprises a step of transferring a call reception request from the counterpart terminal, to each of the information processor and the telephone terminal corresponding to each other.

[0025]

20 Still another terminal association method according to the present invention is a terminal association method for an Internet telephone system including an information processor having an Internet telephone function enabling to make a call to a counterpart terminal and a call connection 25 controller which connects with the information processor

over an Internet line and accommodates a telephone terminal, the method comprises steps of: causing the information processor and the telephone terminal corresponding to each other to share call control information at the time of
5 making a call to the counterpart terminal; and transferring a call reception request from the counterpart terminal, to each of the information processor and the telephone terminal corresponding to each other.

[0026]

10 A program for executing the terminal association method according to the present invention is a program of a terminal association method for an Internet telephone system including an information processor having an Internet telephone function enabling to make a call to a
15 counterpart terminal and a call connection controller which connects with the information processor over an Internet line and accommodates a telephone terminal, for causing a computer to execute a process of causing the information processor and the telephone terminal corresponding to each
20 other to share call control information at the time of making a call to the counterpart terminal.

[0027]

Another program for executing the terminal association method according to the present invention is a
25 program of a terminal association method for an Internet

- telephone system including an information processor having an Internet telephone function enabling to make a call to a counterpart terminal and a call connection controller which connects with the information processor over an Internet
- 5 line and accommodates a telephone terminal, for causing a computer to execute a process of transferring a call reception request from the counterpart terminal, to each of the information processor and the telephone terminal corresponding to each other.
- 10 [0028]
- Still another program for executing the terminal association method according to the present invention is a program of a terminal association method for an Internet telephone system including an information processor having an Internet telephone function enabling to make a call to a counterpart terminal and a call connection controller which connects with the information processor over an Internet
- 15 line and accommodates a telephone terminal, for causing a computer to execute processes of causing the information processor and the telephone terminal corresponding to each other to share call control information at the time of making a call to the counterpart terminal, and transferring a call reception request from the counterpart terminal, to each of the information processor and the telephone
- 20 terminal corresponding to each other.
- 25

[0029]

That is to say, the Internet telephone system of the present invention uses a terminal accommodated in a private branch exchange (call connection controller), for example,

- 5 a radio mobile terminal such as a local PHS(Personal Handy-phone System) or a fixed-line terminal, as a handset for the Internet telephone so as to utilize existing telephone equipment, succeed conventional call operation, and transmit/receive voice data using a line of the existing
- 10 private branch exchange, which makes it possible to construct an Internet telephone system which is not required to additionally secure a band for a voice in the Internet line.

[0030]

- 15 An advantage of an Internet telephone of a personal computer (PC) type lies in that an Internet telephone may be easily realized by adding a control software in the PC, for controlling communications. Further, by adding an application in the PC, it is possible to provide functions
- 20 which are not provided in conventional extension terminals, for example, a function of specifying an originating user based on number information, a function of sharing a file in the PC, or the like.

[0031]

- 25 The Internet telephone system of the present

invention uses a radio mobile terminal or a fixed-line terminal accommodated in the conventional private branch exchange as a handset, and informs the PC of call control information at the time of origination or reception.

- 5 Thereby, applications of the Internet telephone constructed by the PC, for example, a function of specifying an originating user based on number information, a function of sharing a file in the PC, or the like, may be used, while keeping compatibility of the conventional call operation.
- 10 [0032]

Further, in the Internet telephone system of the present invention, voice information is transmitted/received using line equipment for the private branch exchange which has been already constructed by the user. Therefore, it is not required to secure a band necessary for transmitting/receiving voice information to the Internet line such as a LAN(Local Area Network).

[0033]

That is to say, in the Internet telephone system of the present invention, a call reception request which arises at the time of arriving at the counterpart terminal is transferred to a PC and to a radio mobile terminal or a fixed-line terminal corresponding to each other, respectively, and a call reception request which arises at the time of making a call to the counterpart terminal is

transferred to a PC and to a radio mobile terminal or a fixed-line terminal corresponding to each other, respectively, and informing the PC of call control information which arises at the time of making a call from
5 a radio mobile terminal or a fixed-line terminal to the counterpart terminal. Thereby, applications of the Internet telephone constructed by the PC, for example, a function of specifying an originating user based on number information, a function of sharing a file in the PC, or the
10 like, may be used, while keeping compatibility of the conventional call operation.

[Best Mode for Carrying out the Invention]

[0034]

Next, embodiments of the present invention will be
15 described with reference to the drawings. Fig. 1 is a block diagram showing an exemplary structure of a call connection controller according to a first embodiment of the present invention. Fig. 1 shows the structure of a case that a private branch exchange (PBX : Private Branch
20 eXchange) 1 is used as a call connection controller in the first embodiment of the present invention.

[0035]

The private branch exchange 1 includes, a call controller 11, an existing (base station) accommodating
25 I/F(interface) 17 for connecting a radio base station 31 or

the like, and a LAN(Local Area Network) accommodating IF 18 for connecting a personal computer(PC) 2 over an Internet line 100 such as a LAN.

[0036]

5 The call controller 11 includes, a connection controller 12, an originator information analyzing unit 13, a receiver information analyzing unit 14, a database 15, and a recording medium 16. The connection controller 12 performs a call connection based on connection information
10 notified from the originator information analyzing unit 13 and the receiver information analyzing unit 14.

[0037]

The originator information analyzing unit 13 is a processing part to obtain, from the database 15, number
15 information notified from the originating terminal (not shown), and the receiver information analyzing unit 14 is a processing part to obtain, from the database 15, receiver information. The database 15 stores terminal association information described later, and the recording medium 16 is
20 a medium such as a memory for storing a program (a program executable on a computer) for controlling the private branch exchange 1.

[0038]

The existing (base station) accommodating IF 17 is an
25 interface accommodating radio mobile terminals (not shown)

as well as existing fixed-line terminals (not shown) through a radio base station 31. The LAN accommodating IF 18 is an interface for transmitting/receiving information to/from an Internet telephone function of a PC 2 connected 5 with the Internet line 100 such as a LAN.

[0039]

Figs. 2 and 3 show examples of configuring a table in the database 15 of Fig. 1. Fig. 2 shows a table 15a for searching for associate PCs based on terminal numbers 10 according to the first embodiment of the present invention. Fig. 3 shows a table 15b for searching for the terminal numbers based on the associate PCs according to the first embodiment of the present invention.

[0040]

15 In Fig. 2, the table 15a stores, a "terminal number" ("3000", "2000", "2500", "4561", "2381", "1546"), an "associate PC address" ("192.168.0.160", "192.168.20.50", "10.45.128.38", "172.16.18.60", "10.48.55.64", "172.18.253.8"), and an "associate PC terminal number" 20 ("3010", "2010", "2510", "4571", "2391", "1556"), respectively, in this order.

[0041]

In Fig. 3, the table 15b stores, an "associate PC address" ("192.168.0.160", "192.168.20.50", "10.45.128.38", "172.16.18.60", "10.48.55.64", "172.18.253.8"), an 25

"associate PC terminal number" ("3010", "2010", "2510", "4571", "2391", "1556"), and a "terminal number" ("3000", "2000", "2500", "4561", "2381", "1546"), respectively, in this order.

5 [0042]

Fig. 4 is a block diagram showing the structure of an Internet telephone system according to the first embodiment of the present invention. In Fig. 4, the Internet telephone system according to the first embodiment of the 10 present invention includes, the private branch exchange 1, the PC 2, radio base stations 31, 32 connected with the private branch exchange 1, and a first terminal 41 and a second terminal 42 which are radio mobile terminals or fixed-line terminals, accommodated in the private branch 15 exchange 1. The private branch exchange 1 executes a program in the recording medium 16, and various controls are realized.

[0043]

The PC 2 has a voice input/output unit 21, a 20 communication interface (I/F) unit 22 for transmitting/receiving internet telephone information over an Internet line 100 such as a LAN, and a control software 23 for controlling communications necessary for transmitting/receiving control information between a 25 connection controller such as the private branch exchange 1.

Although not shown, the PC 2 has an Internet telephone function which enables to make a call to a counterpart terminal over the Internet line 100 such as a LAN.

[0044]

5 When making a call using the PC 2, an originating manipulation is made by dialing the receiver's number using a keyboard 24 connected with the PC 2, or by activating an application such as a telephone book. In the private branch exchange 1, information about the PC 2 and
10 information about the first terminal 41 associating with the PC 2 have been registered beforehand in the database 15 so as to be corresponded one to one. When the private branch exchange 1 receives an origination request from the PC 2, a call connection request to the second terminal 42
15 is performed, and at the same time, establishes a call path between the first terminal 41 and the second terminal 42.

[0045]

Fig. 5 is a flowchart showing an operation of making a call using the PC 2 in Fig. 4. Referring to Figs. 1 to 5,
20 the operation of the Internet telephone system according to the first embodiment of the present invention will be described. It should be noted that processing shown in Fig. 5 is realized by the private branch exchange 1 executing a program in the recording medium 16.
25 [0046]

When making a call with a use of the PC 2, upon receipt of the information which is notified by dialing the receiver's number using a keyboard 24 connected with the PC 2, or by performing originating manipulation by activating 5 an application such as a telephone book on the PC 2, the private branch exchange 1 activates the originating manipulation to start processing (step S1 in Fig. 5).

[0047]

The private branch exchange 1 judges whether the 10 origination request is from the PC 2 or from the first terminal 41 (step S2 in Fig. 5), and if the request is from the PC 2, the private branch exchange 1 performs number analysis processing of the PC 2, which is the originator (step S3 in Fig. 5). The number analysis processing is 15 performed using a number which can specify the PC 2, identification information such as one used for transmitting/receiving control information between the private branch exchange 1, or data of IP(Internet Protocol) address. As for the case that the origination request is 20 from the first terminal 41, processing described later is executed.

[0048]

The private branch exchange 1, when performed the number analysis processing of the PC 2, searches for 25 information about associating first terminal 41, for

example, the unique extension (terminal number) of the terminal, among pieces of information which have been registered beforehand in the database 15 of the private branch exchange 1, based on the number from which the PC 2

- 5 can be specified (in the present embodiment, IP address) (step S4 in Fig. 5).

[0049]

Based on the search result, the private branch exchange 1 judges whether there is information about an

- 10 associating terminal (step S5 in Fig. 5). If there is no associating terminal information, the private branch exchange 1 continues processing for connecting with the counterpart terminal, and when the receiver replies, the user starts speaking by using a handset (not shown)
- 15 connected with the voice input/output unit 21 of the PC 2 (step S9 in Fig. 5).

[0050]

If there is information about an associating terminal, the private branch exchange 1 starts monitoring the state

- 20 of the terminal corresponding to the extension searched (step S6 in Fig. 5), and when detects the originating manipulation by the first terminal 41 (step S7 in Fig. 5), continues processing for connecting with the receiver's number input from the keyboard 24 connected to the PC 2,
- 25 and when the receiver replies, the user starts speaking,

using the first terminal 41 (step S9 in Fig. 5).

[0051]

When the originating manipulation from the first terminal 41 is not detected (step S7 in Fig. 5) and a monitoring timeout is detected (step S8 in Fig. 5), the private branch exchange 1 determines the first terminal 41 is not in the state of being able to originate, and continues processing for connecting with the receiver's number input from the keyboard 24 connected to the PC 1, and when the receiver replies, the user starts speaking, using a handset (not shown) connected with the voice input/output unit 21 of the PC 2, (step S9 in Fig. 5).

[0052]

Fig. 6 is a diagram showing an operation of making a call using the first terminal 41 in Fig. 4. Referring to Figs. 4 and 6, an operation of making a call using the first terminal 41 will be explained.

[0053]

A connection to the second terminal 42 is performed by manipulating a dial board (not shown) of the first terminal 41 and inputting the receiver's number, or activating the initializing application installed in the first terminal 41. In this case, in the conventional connection mode, if an origination manipulation is performed from the first terminal 41, a processing only for

connecting the first terminal 41 and the second terminal 42 which is the requested connecting counterpart has been performed.

[0054]

5 The private branch exchange 1 has information about the first terminal 41 and the corresponding (associating) PC 2 beforehand by registering one to one (see Figs. 2 and 3), and the call controller 11 of the private branch exchange 1, upon receipt of an origination request from the
10 first terminal 41, requests a call connection to the second terminal 42 to thereby establishes a call path between the first terminal 41 and the second terminal 42, and at the same time, associates a connection state with the PC 2.

[0055]

15 Fig. 7 is a flowchart showing an operation of making a call using the first terminal 41 in Fig. 6. Referring to Figs. 1 to 3, 6 and 7, an operation of making a call using the first terminal 41 will be explained. It should be noted that the processing operation shown in Fig. 7 is
20 realized by the private branch exchange 1 executing a program in the recording medium 16.

[0056]

When making a call using the first terminal 41, upon receipt of the information notified by manipulating a dial
25 board of the first terminal 41 so as to input the

receiver's number, or activating an origination application installed in the terminal, to thereby perform a connecting manipulation to the counterpart, the private branch exchange 1 activates the originating manipulation to start 5 processing (step S11 in Fig. 7).

[0057]

The private branch exchange 1 judges whether the origination request is from the first terminal 41 or the PC 2 (step S12 in Fig. 7). If it is from the first terminal 10 41, the private branch exchange 1 performs number analysis processing of the first terminal 41 (step S13 in Fig. 7). It should be noted that if the origination request is from the PC 2, the processing in Fig. 5 described above is performed.

15 [0058]

The private branch exchange 1, after performing the number analysis processing of the first terminal 41, searches for information about an associating PC 2 among pieces of information registered in the private branch 20 exchange 1 beforehand such as identification information for use in transmitting/receiving control information between the private branch exchange 1, or an IP address (in the present embodiment, IP address), based on a number, with which the first terminal 41 can be specified, such as 25 identification information for use in

transmitting/receiving control information between the private branch exchange 1 (in the present embodiment, an extension (terminal number)) (step S14 in Fig. 7).

[0059]

5 The private branch exchange 1 judges from the search result whether there is information about the associating terminal (step S15 in Fig. 7), and if there is no information about the associating terminal, continues processing for connecting with the second terminal 42.

10 When the counterpart replies, the user starts speaking with a use of the first terminal 41 (step S19 in Fig. 7).

[0060]

If there is information about the associating terminal information, the private branch exchange 1 informs

15 the PC 2 of origination information indicating that the first terminal 41 is in the state of being able to originate and is performing an origination to the second terminal 42 and the like, based on information about the PC 2 obtained from the aforementioned search, for example,

20 identification information for use in transmitting /receiving the control information between the private branch exchange 1 (in this embodiment, IP address) (step S16 in Fig. 7).

[0061]

25 The private branch exchange 1, when an

ACK(acknowledgement) to the origination information is replied from the PC 2 (step S17 in Fig. 7), determines that the PC 2 acknowledges a state change in the first terminal 41, continues processing for connecting with the second 5 terminal 42, and when the counterpart replies, the user uses the first terminal 41 so as to start speaking (step S19 in Fig. 7).

[0062]

The private branch exchange 1, when an ACK to the 10 origination information is not replied from the PC 2 (step S17 in Fig. 7) and a monitoring timeout is detected (step S18 in Fig. 7), determines that the PC 2 does not acknowledge a state change in the first terminal 41 by a reason of the power being off, or the like, continues 15 processing for connecting with the second terminal 42, and when the counterpart replies, the user uses the first terminal 41 so as to start speaking (step S19 in Fig. 7).

[0063]

Fig. 8 is a flowchart showing an operation when a 20 call to a user having the PC 1 and the first terminal 41 in Fig. 4 arrives. Referring to Figs. 1 to 4 and 8, an operation, when a call to the user having the PC 1 and the first terminal 41 arrive, will be explained.

[0064]

25 The private branch exchange 1, following an

originating manipulation from the user having the second terminal 42 (originating manipulation same as shown in Fig. 5), establishes a call path and starts arrival manipulation at the time of arrival at the user having the PC 1 and the 5 first terminal 41 (step S21 in Fig. 8).

[0065]

Following the arrival manipulation, the private branch exchange 1, based on the number that the second terminal 42 dials, reads out, from the database 15, 10 registration information indicating whether the terminal with the number associates (associating terminal information) (step S22 in Fig. 8).

[0066]

The private branch exchange 1 judges from the search 15 result whether there is associating terminal information (step S23 in Fig. 9). If there is no associating terminal information, the private branch exchange 1 continues processing for connecting with the second terminal 42, and the user uses the first terminal 41 so as to start speaking 20 (step S26 in Fig. 9).

[0067]

If there is associating terminal information, the private branch exchange 1 informs the first terminal 41 and the PC 1, respectively, that a call connection is requested 25 (step S24 in Fig. 9). The private branch exchange 1, at

the stage that the user having the terminal acknowledging the inbound call is in the state of replying to the inbound call (step S 25 in Fig. 9), establishes a call path between the second terminal 42, continues processing for connecting 5 with the second terminal 42, and the user uses the first terminal 41 so as to start speaking (step S26 in Fig. 9). In this case, since the PC 1 is informed of information about the second terminal 42 which is the originator, it is possible to provide a function of specifying the 10 originating user based on, for example, the number information, or the like.

[0068]

In this way, the present embodiment, by automatically associating two terminals at the time of activating 15 origination processing or inbound processing by referring to associating terminal information which has been registered in the database 15 of the private branch exchange 1, the extension numbers can be managed in a unified way even when an Internet telephone function and 20 existing extension terminals are held.

[0069]

Further, it has been required to connect the Internet telephone function with the Internet line 100 such as a LAN conventionally, and the freedom range is limited. However, 25 in the present embodiment, as existing extension terminals

by associating with the radio mobile terminal, the user can start speaking in an area where the PC 2 having the Internet telephone function is not installed, and a freedom in a place where the user stays can be increased.

5 [0070]

Further, when, for example, originating manipulation is performed based on the telephone book information stored in the PC 2 and then the user moves with the radio mobile terminal used as a handset, or when the user is in a place 10 away from the installment position of the PC 2, an inbound call is received at both the PC 2 and the radio mobile terminal used as a handset, so that the user do not miss an opportunity of receiving the inbound call.

[0071]

15 Further, in the present invention, by using the terminal with which the voice information is accommodated in the private branch exchange 1, for example a radio mobile terminal such as a local PHS(Personal Handy-phone System) or a fixed-line terminal, voice information is 20 transmitted/received over the line for the existing private branch exchange 1, not using the Internet line 100 such as a LAN. Therefore, it is not necessary to reinforce bands of the Internet line 100 such as a LAN.

[0072]

25 Conventionally, when constructing an Internet

telephone, it is necessary to secure bands for transmitting/receiving voice information in an Internet line such as a LAN. In a case that the user equipment cannot secure bands enough for transmitting/receiving voice,

- 5 the user equipment is required to be updated for constructing the Internet telephone. As such, there is a problem that the capital investment of the user increases. . However, the present embodiment can solve this problem.

[0073]

10 Although a case that the PC 2 and the private branch exchange 1 are provided is described above, the present embodiment can be realized with an information processor (such as a workstation, server or the like) having an Internet telephone function, and is not limited to the PC 2.

15 Further, the call connection controller is not limited to the private branch exchange 1. It is also possible to connect with extension terminals over the Internet line 100a such as a LAN, except for the lines of the private branch exchange.

20 [0074]

Fig. 9 is a block diagram showing the structure of an Internet telephone system according to another embodiment of the present invention. In Fig. 9, the Internet telephone system according to another embodiment of the 25 present invention has the similar structure as the Internet

telephone system according to the first embodiment of the present invention shown in Fig. 4, except that a PC 5 corresponding to the second terminal 41 is provided. The same components are indicated by the same reference numerals, and the operations of the same components are similar to that in the first embodiment of the present invention.

[0075]

The PC 5 includes, as same as the PC 2 shown in Fig. 10 4, a voice input/output unit 51, a communication interface(I/F) unit 52 for transmitting/receiving Internet telephone information over an Internet line 101 such as a LAN, and a control software 53 for controlling communications necessary for transmitting/receiving control 15 information between a connection controller such as the private branch exchange 1. A PC 6 has an Internet telephone function (not shown) which enables to speak to the counterpart terminal over the Internet line 101 such as a LAN.

20 [0076]

Fig. 10 is a sequence chart showing an operation when making a call using the PC 2 in Fig. 9. Fig. 11 is a sequence chart showing an operation when making a call using the first terminal 41 in Fig. 9. Referring to Figs. 25 9 to 11, an operation of the user having the PC 5 and the

second terminal 42, corresponding to each other, at the time of receiving responding to an origination from the PC 2 or the first terminal 41 in Fig. 9, will be explained.

[0077]

5 A user who is an originating user having the PC 2 and the first terminal 41 uses a keyboard 24 connected with the PC 2 or manipulates a dial board of the first terminal 41 to thereby make a call to the second terminal 42 (a1 in Fig. 10, b1 in Fig. 11).

10 [0078]

The private branch exchange 1 stores information about the second terminal 42 and information about the PC 5 associating with the second terminal 42 by corresponding to each other. When receiving an origination request from the 15 PC 2 or the first terminal 41 (a2 in Fig. 10, b2 in Fig. 11), the originating side of the private branch exchange 1 replies a request receipt to the PC 2 or the first terminal 41 (a3 in Fig. 10, b3 in Fig. 11).

[0079]

20 Then, the originating side of the private branch exchange 1 searches the database 15 and judges whether there is information about an associating terminal (a4 in Fig. 10, b4 in Fig. 11). If it is the origination request from the PC 2, the origination side of the private branch 25 exchange 1 judges that there is information about

associating terminal, and starts monitoring the state of the corresponding first terminal 41. When detecting the origination request from the first terminal 41 (a5 in Fig. 10), transmits a receipt request to the inbound side of the
5 private branch exchange 1 (a6 in Fig. 10).

[0080]

In the case that the origination request is from the first terminal 41, when the origination side of the private branch exchange 1 judges there is information about

10 associating terminal, informs the corresponding PC 1 of the origination information (request indication) (b5 in Fig. 11), and transmits a receipt request to the inbound side of the private branch exchange 1 (b6 in Fig. 11).

[0081]

15 The inbound side of the private branch exchange 1 searches the database 15, and judges whether there is information about the associating terminal (a7 in Fig. 10, b7 in Fig. 11). When judging there is information about the associating terminal, the inbound side of the private
20 branch exchange 1 informs both of the corresponding second terminal 42 and the PC 2 that the first terminal 41 is requesting a call connection (incoming request) (a8 and a9 in Fig. 10, b8 and b9 in Fig. 11).

[0082]

25 The inbound side of the private branch exchange 1, at

a stage that the user recognizing the inbound call causes the second terminal 42 to be in the state of replying to the inbound call (a10 in Fig. 10, b10 in Fig. 11), sends back replies to the origination side of the private branch exchange 1 and the first terminal 41 in order (a11 and a12 in Fig. 10, b11 and b12 in Fig. 11), establishes a call path with the first terminal 41, and makes a call with the first terminal 41 (a13 in Fig. 10, b13 in Fig. 11).

[0083]

10 In this case, the inbound side and the originating side of the private branch exchange 1 send back replies to the PC 2 and the PC 5, respectively (a14 and a15 in Fig. 10, b14 and b15 in Fig. 11). Therefore, on the PCs 2 and 5, information about the corresponding second terminal 42 or
15 first terminal 41 is displayed (a16 and a17 in Fig. 10, b16 and b17 in Fig. 11).

[0084]

With the aforementioned operation, the private branch exchange 1 recognizes an association of the PC 2
20 associating with the first terminal 41 and the PC 5
 associating with the second terminal 42 over the Internet lines 100, 101 such as LANs.

[0085]

In this way, in the present embodiment, numbers for
25 specifying radio mobile terminals which are used as

handsets by the both who are communicating each other, such as extensions, and numbers for specifying both PCs 2, 5 associating with the terminals, such as IP addresses, are managed by the private branch exchange 1. Thereby, in 5 addition to the effect obtained from the aforementioned embodiment of the present invention, another effect that the PCs 2, 5 shown in Fig. 9 can share the information in the calling state.

[0086]

10 Conventionally, extension terminals for performing voice call and PCs are formed independent to each other. As such, when performing a file exchange, it is necessary to take such measures as activating a mailing software so as to attach a file to a mail in which the address is 15 designated, or using an FTP(File Transfer Protocol) function so as to perform a file transfer to the counterpart IP address, or the like. In contrast, in the present embodiment, information can be shared between the PCs 2, 5 easily, as described above.

20 [0087]

In the present embodiment, an association between the first terminal 41 and the PC 2, and an association between the second terminal 42 and the PC 5 are set respectively in the originating manipulation, as described above. The 25 purpose of this associating processing is to cause the

connecting counterpart's number, the speaking period, the state of speaking, or the like to be displayed on the PCs 2, 5 even when radio mobile terminals are used for calling.

Of course, in a case of originating a call from the

- 5 Internet telephone function of the PCs 2, 5, the connecting counterpart's number, speaking period, the state of speaking, or the like are to be displayed on the PCs 2, 5.

[0088]

In the inbound operation, an association between the

- 10 first terminal 41 and the PC 2, and an association between the second terminal 42 and the PC 5 are set respectively, as same as aforementioned. The purpose of this associating processing is to cause the connecting counterpart's number, the speaking period, the state of speaking, or the like to 15 be displayed on the PCs 2, 5, even when a call is arrived at radio mobile terminals. Of course, even in a case that a call is arrived at the Internet telephone function of the PCs 2, 5, the connecting counterpart's number, speaking period, the state of speaking, or the like are to be 20 displayed on the PCs 2, 5.

[0089]

In the inbound operation, it is possible to know

information about a PC of the receiver, for example, an IP address, by reading out information about the associating

- 25 terminal from the database 15. In the calling state, since

it is possible to know IP addresses of the PCs of both the originator and the receiver, the counterpart can be specified by inquiring of the private branch exchange 1 about the counterpart of the call, without manually

- 5 inputting the counterpart information from the PC. This effect can be applied to a video conference (television conference) or the like.

[0090]

Fig. 12 is a flowchart showing an exemplary operation
10 of a video conference application which is operable on the PCs 2, 5 in Fig. 9. Referring to Fig. 12, an operation of a video conference application will be described.

[0091]

Conventionally, in the PCs 2, 5, when a video
15 conference application is activated, it is necessary to manually input information for specifying the counterpart such as IP address or the like of the counterpart with which the video conference is to be performed.

[0092]

20 In contrast, in the present invention, if there is an association (step S31 in Fig. 12), an inquiry is made from the Internet telephone function of the PCs 2, 5 to the private branch exchange 1 about the counterpart with which the communication is performed (step S32 in Fig. 12), and
25 automatically perform a connection between the terminals

(step S34 in Fig. 12). Accordingly, there is no need to perform a procedure of manually inputting information for specifying the counterpart such as an IP address of the counterpart (step S33 in Fig. 12), so that the connecting 5 operation by the user is simplified and eased.

[0093]

(Effect)

As described above, the present invention has an effect that Internet telephone functions and existing 10 extension terminals can be associated to thereby increase a freedom in a place where the user stays.

BRIEF DESCRIPTION OF THE DRAWINGS

[FIG. 1] A block diagram showing an exemplary 15 structure of a call connection controller according to a first embodiment of the present invention.

[Fig. 2] A table showing an exemplary table structure in a database of Fig. 1.

[Fig. 3] A table showing an exemplary table structure 20 in a database in Fig. 1.

[Fig. 4] A block diagram showing the structure of an Internet telephone system according to the first embodiment of the present invention.

[Fig. 5] A flowchart showing an operation of making a 25 call using a PC in Fig. 4.

[Fig. 6] A diagram showing an operation of making a call using a first terminal in Fig. 4.

[Fig. 7] A flowchart showing an operation of making a call using a first terminal in Fig. 6.

5 [Fig. 8] A flowchart showing an operation when a call to a user having the PC and the first terminal in Fig. 4 arrives.

[Fig. 9] A block diagram showing the structure of an Internet telephone system according to another embodiment
10 of the present invention.

[Fig. 10] A sequence chart showing an operation of making a call using a PC in Fig. 9.

[Fig. 11] A sequence chart showing an operation of making a call using a first terminal in Fig. 9.

15 [Fig. 12] A flowchart showing an exemplary operation of a video conference application operable on the PC in Fig. 9.

[Fig. 13] A block diagram showing an exemplary structure of making a call between terminals using a
20 conventional private branch exchange.

[Fig. 14] A block diagram showing an exemplary structure of making a call between terminals using a conventional Internet telephone system.

25 [Description of Symbols]

1 private branch exchange
2, 5 personal computer
11 call controller
12 connection controller
5 13 originator information analyzing unit
14 receiver information analyzing unit
15 database
15a, 15b table
16 recording medium
10 17 existing (base station) accommodating I/F
18 LAN(Local Area Network) accommodating IF
21, 51 voice input/output unit
22, 52 communication interface(I/F) unit
23, 53 control software
15 24, 54 keyboard
100, 101 Internet line such as a LAN
31, 32 radio base station
41 first terminal
42 second terminal

20

25

[Document title] Abstract

[Abstract]

[Object]

5 To provide an Internet telephone system which is capable of establishing associations between Internet telephones and existing extension terminals, and increasing a freedom of a place where a user can stay.

[Scheme]

10 A private branch exchange, when notified information of an originating manipulation such as dialing of a receiver's number from a keyboard connected with a PC, judges whether an origination request is from the PC or a first terminal. In a case of the request being from the PC,
15 the private branch exchange performs number analysis processing of the PC which is the originator. The private branch exchange judges whether there is information about a terminal associating with the terminal requesting the origination, and when there is information for the terminal,
20 performs to connect with the associating terminal, and processes the origination request to thereby connect with the counterpart terminal. When there is no information about the terminal, the private branch exchange processes the origination request as usual to thereby connect with
25 the counterpart terminal.

[Selected Drawing] Fig. 4